CONSTRUCTION
FATALITY DIGEST

QUARTERLY REPORT
VOL. 7 NO. 1
January – March 2018

Inside this Issue

Topics of Interest

HASLAM COLLEGE OF BUSINESS
THE UNIVERSITY OF TENNESSEE, KNOXVILLE

CONSTRUCTION INDUSTRY
& RESEARCH POLICY CENTER

"All types of falls (roof, ladder, structure, opening, etc.) accounted for 51.7% (45 events) in the first quarter of 2018"

Fall Events Account for More than 50% of Total Events

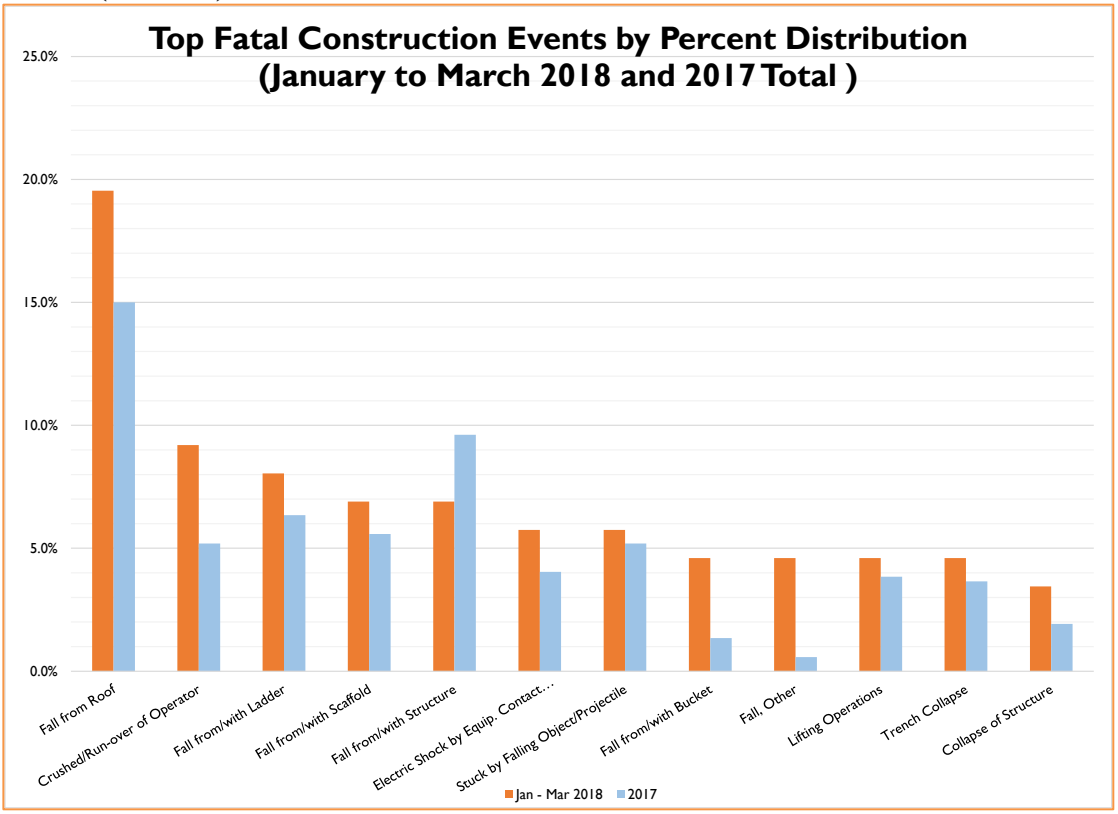
For the first quarter of 2018, CIRPC received 87 reports of fatal events in construction. For the most part the pattern of causes remained similar to the results reported for the previous calendar year (2017).

"Fall from Roof" led all categories with 17 events (19.5%) of the 87 events. This is nearly a 5% increase from the previous quarter (20 events, 15.3%). For all of 2017 "Fall from Roof" totaled 78 events (15.0%).

"Crush/Run-over of Operator" was the second leading cause with 8 events (9.2%) followed by "Fall from/with Ladder" with 7 events (8.0%), and "Fall from/with Scaffold" and "Fall from/with Structure" each with 6 events (6.9%).

There were two additional notable shifts (other than "Fall from Roof"). "Crushed/Run-over by Operator" increased from 5.2% to 9.2% for the current quarter. "Crushed/Run-over by Highway Vehicle" decreased from 6.1% (in the previous quarter) to 2.3% for the first quarter.

All types of falls (roof, ladder, structure, opening, etc.) accounted for 51.7% (45 events) in the first quarter of 2018. This is an increase from 45.0% (59 events) from the previous quarter and a 10.1% increase from the third quarter in 2017 (41.6%, 62 events). The 2017 total amounted to 43.5% (226 events).



Regional Breakdown

Of the 87 events reported for the first quarter of 2018, 26.4% came from Region 4 (23 events), 24.1% (21 events) came from Region 6, and 12.6% (11 events) from Region 5. Regions 4, 5, and 6 accounted for over 60% of the total.

Of these, 67.8% (59 events) were reported from Federal OSHA states, while 32.2% (28 events) occurred in State Plan states.

The breakdown by state revealed Texas with the greatest number of events with 17 (19.5%), followed by Florida with 6 (6.9%).

Fatal Events Reported by OSHA Region

January to March 2018

Region	# of Cases	Percent
1	3	3.4%
2	7	8.0%
3	3	3.4%
4	23	26.4%
5	11	12.6%
6	21	24.1%
7	4	4.6%
8	5	5.7%
9	6	6.9%
10	4	4.6%
Total	87	100.0%

Fatal Events by NAICS Code

A breakdown of top reported fatal events by NAICS code shows "Roofing Contractors" at the top with 16.1% (14 events) of the total events. Other top codes are "Commercial and Institutional Building Construction" contractors and "Site Preparation Contractors" each with 8.0% (7 events) followed by "Highway, Street, and Bridge Construction" contractors with 6.9% (6 events).

"Roofing Contractors" was also the top code in the previous quarter with 9.2% (12 events).

Fatal Events by NAICS Code

Code	Description	# of Cases	Percent
238160	Roofing Contractors	14	16.1%
236220	Commercial and Institutional Building Construction	7	8.0%
238910	Site Preparation Contractors	7	8.0%
237310	Highway, Street, and Bridge Construction	6	6.9%
236115	New Single-Family Housing Construction	5	5.7%
237990	Other Heavy and Civil Engineering	5	5.7%
238110	Poured Concrete Foundation and Structure Contractors	5	5.7%
238130	Framing Contractors	5	5.7%
236118	Residential Remodelers	4	4.6%
238210	Electrical Contractors	4	4.6%
238990	All Other Specialty Trade Contractors	4	4.6%
238140	Masonry Contractors	3	3.4%
238220	Plumbing, Heating, and Air-Conditioning Contractors	3	3.4%
238290	Other Building Equipment Contractors	3	3.4%
238310	Drywall and Insulation Contractors	3	3.4%
238120	Structural Steel and Precast Concrete Contractors	2	2.3%
238390	Other Building Finishing Contractors	2	2.3%
236116	New Multifamily Housing Construction	1	1.1%
236210	Industrial Building Construction	1	1.1%
237110	Water and Sewer Line and Related Structures Construction	1	1.1%
238170	Siding Contractors	1	1.1%
238190	Other Foundation, Structure, and Building Exterior Contractors	1	1.1%
		87	100.0%

Top Construction Standard Violations During 2018

For the 87 fatal events for 2018, 12 case files reported a total of 32 violations of OSHA standards. Since inspectors have up to six months to issue citations on a fatality it is very likely that additional citations will be forthcoming.

The violations and their frequencies are listed in the table below. The average number of violations per case with citations issued was 2.67. For the three previous calendar years, 2015, 2016, and 2017 the average number of violations per case was 3.24, 3.43, and 3.36 respectively.

The "Fall Protection" standard is the top violation for the year to date with 5 occurrences, followed by "Hazard Communication" and "Fall Protection Training" each with 3 occurrences.

When comparing the total of 2018 calendar year violations with OSHA's top standards violated in Fiscal Year 2017 (per www.osha.gov), there are many similarities. "Fall Protection", "Hazard Communication", "Fall Protection Training", "Scaffolding", and "Ladders" appear in the top standards violated on both CIRPC's and OSHA's list.

Top OSHA Standard Violations Reported
(January - March 2018)

Rank	Std #	Description	# of Occurrences
1	1926.501	Fall Protection	5
T2	1910.1200	Hazard Communication	3
T2	1926.503	Fall Protection Training	3
T4	1904.39	Reporting Fatalities, Hosp., Amputations, and Eye Loss	2
T4	1926.1053	Ladders	2
T4	1926.1060	Stairways and Ladders - Training Requirements	2
T4	1926.451	Scaffolding	2
T4	1926.850	Demolition - Preparatory operations	2
T4	5a1	General Duty Clause	2

CIRPC Undertakes Multi-Year Study of Workers' Compensation Injury Data for Tennessee

The University of Tennessee's Construction Research and Policy Center (CIRPC) has received a grant from the Centers for Disease Control (CDC) National Institute of Occupational Safety and Health (NIOSH) to use Tennessee workers' compensation claims data for occupational injury surveillance and prevention. It is hoped that such data will be more complete than currently available from the Bureau of Labor Statistics in its Survey of Occupational Injuries and Illness (SOII). For 2014 and 2015 some 100,000 injury records are available for each year.

In keeping with the theme of this newsletter and the focus of CIRPC, an initial emphasis has been on the construction sector in Tennessee. Here the number of injuries reported for each year has been around 4,500.

Perhaps the most notable preliminary observation emerging from the data pertains to the employee tenure. A substantial portion of the recorded injuries occurred during the first year of employment (43.4) with 28.8 taking place during the first six months*. This finding suggests that orientation training of new workers (sometimes called "onboarding") may be of crucial importance in measures to improve construction safety.

As more data is analyzed, we hope to report other interesting findings such as employee age, firm size, injury cause, and the nature of the injury.

It is assumed that recognition of this fact, along with other relationships found the data may have relevance to the nature of new worker orientation training or "onboarding".

---

* - The sectors in Tennessee with a higher injury percentage in the first year of employment are Administrative with 69%, Arts at 56%, Food Services with 51%, and Agriculture, Farming, and Fishing at 49%, .

Summary of Fatal Events

Below is a random selection of 36 fatal event summaries from the 87 cases reported for the quarter. These narratives are taken directly from the reports filed by the OSHA's Certified Safety and Health Officials (CSHOs) with only minor editing.

CATEGORY: ROOF FALLS

Inspection Number: 1302127
The employee was working on the roof of a body shop and fell more than 20 feet. He fell through the roof and struck a forklift and sustained severe injuries and passed away.

Inspection Number: 1310067
Employee was installing insulation on a roof approximately 10-12 feet high, when he fell through the roof to the concrete below striking his head.

Inspection Number: 1310630
A crew of employees were power washing the roof of a building with the goal of making roof repairs. Four employees were working on an upper roof, including the decedent. Employees heard a loud noise and found the decedent had fallen to the lower roof. The decedent was found face down. Emergency services were summoned.

Inspection Number: 1312671
Employees were on top of a flat metal roof to strip old roofing materials and replace with new roofing materials. One employee was walking on the roof when he fell through, approximately 20 feet to ground level.

Inspection Number: 1317481
Employee fell through the roof of a building located 30 feet above the ground while assisting other employees in laying metal roof panels on the roof of the building. The employee stepped on top of the roof insulation and fell through to the lower concrete floor.

Inspection Number: 1317309
An employee fell from height without fall protection on a steep pitched two story residence while doing installation of metal roofing system. The employee fell 17 feet.

CATEGORY: OTHER FALL EVENTS

Inspection Number: 1305363
Employee was working from a ladder at a height of approximately 13 feet. At some point he lost his balance on the ladder and he fell to the ground. Employee was transported to the hospital where he passed away.

Inspection Number: 1302899
Employee was working from an A-Frame ladder replacing screens and fell when he lost his step.

Inspection Number: 1319465
An employee was working from a makeshift type scaffold attempting to install an electrical box in the ceiling. The platform collapsed and the employee fell approximately 9-12 feet to the floor below.

Inspection Number: 1313795
An employee was installing drywall from a wooden plank in a residential construction, when it collapsed, causing him to fall.

Inspection Number: 1307069
The employee fell through the ceiling joists from the attic about 22 feet in a vacant residential home under new construction.

Inspection Number: 1301755
An employee was removing metal panels off of a storm damaged pole barn when he stepped on a 2x4 which broke and he fell 23 feet to the ground below.

Inspection Number: 1303661
An employee and a co-worker were carrying a tilt-up wall brace in preparation of a wall erection operation. The employee tripped and fell to the ground hitting his head on the concrete floor and sustaining head trauma.

Inspection Number: 1298623
Employee was stacking materials on a 2nd story roof using an extension ladder and fell from ladder to a concrete driveway below suffering fatal injuries.

Inspection Number: 1312471
Employee 1 was planning to make repairs to a leaking roof of an existing two-story residential structure. Employee 1 climbed a 32-foot extension ladder while employee 2 held the ladder. Employee 1 placed his left foot onto the roof and as he was preparing to place his right foot onto the roof, his left foot slipped, causing him to lose his balance and fall. Employee 1 grabbed the rain gutter but it pulled loose and the employee fell approximately 23-feet to a concrete surface below.

CATEGORY: OTHER FALL EVENTS (Continued)

Inspection Number: 1314825
Employees were on roof, installing an HVAC unit duct work at a commercial site. One employee left the roof to go to his vehicle to get a box of screws. The employee fell as he was climbing down the ladder, approximately 15 feet, and sustaining fatal multiple blunt force trauma injuries.

Inspection Number: 1306948
The employee was being raised approximately 10 feet to the roof edge, while he was inside a cage, on the forks of a forklift. The cage was not secured to the forklift and when the employee attempted to step off the cage the employee and the cage fell off the side of the forks. The employee landed on the paved surface below.

Inspection Number: 1300271
Employee fell approximately 20 feet from the basket of an aerial lift. Employee died from head injury. The incident and subsequent fatality was reported by local Fire Marshal.

CATEGORY: ELECTROCUTIONS

Inspection Number: 1299489
Victim was assisting with building a scaffold next to a two story building for masonry repair. The employer was on the scaffolding with the deceased as they were getting ready to tie the scaffolding into the building. The deceased employee had a metal scaffolding railing piece in his hand that came in close proximity to power transmission lines located in close proximity to the scaffolding. The metal object contacted the power line resulting in the victim being electrocuted.

Inspection Number: 1313402
Employee was performing tree trimming when he contacted a 21 kV high voltage line.

Inspection Number: 1303027
Three employees were installing a metal gutter from different elevated work platforms when one employee's lift contacted a power line. The electricity traveled down the gutter causing one employee to be electrocuted and another to be seriously injured.

Inspection Number: 1320864
An electrician was in the process of de-energizing a transformer located within a RV park to install a new 200-amp breaker. The employee made contact with high voltage energized electrical parts and was electrocuted.

CATEGORY: STRUCK BY, RUN OVER, CRUSHED BY OPERATING CONSTRUCTION EQUIPMENT/VEHICLE

Inspection Number: 1314561
A truck was backing up while traffic cones were being picked up, when the truck backed over the victim. The victim was behind the truck for an unknown reason.

Inspection Number: 1300360
An employee operating a powered industrial truck was backing up along a steep incline, while carrying a load of railroad ties. The truck rolled over fatally ejecting the operator.

Inspection Number: 1323327
The employee was conducting maintenance on an overhead garage door in a bucket truck at a height over 16 feet. He was trapped by the chain lift mechanism causing multiple head injuries.

Inspection Number: 1305234
An employee was caught/crushed between the arm and the body of a skid loader.

Inspection Number: 1301617
The victim was operating a small excavating machine to help dig out part of the foundation of a house on the site for the addition of a new basement. Investigators believe that something caught on the elevation lever of the excavating machine — described as a "Dingo," a machine with which the operator walks rather than drives — and caused the victim to become pinned between the machine and a steel beam.

Inspection Number: 1299493
A dump truck driver rolled over his truck after unloading it. The driver was in the process of returning to the excavation area to pick up another load of dirt. When returning to the excavation area, the driver drove off the haulage road and rolled the dump truck over causing fatal injuries.

Inspection Number: 1303119
Employee was sent to the hospital after an incident with a vehicle on a road. Employees were evaluating the site for work that needed to be completed. Employees were standing on the sidewalk when they were hit by a vehicle. One employee died from his injuries.

CATEGORY: OTHER FATALITY CAUSES

Inspection Number: 1310675
Employees were dismantling a gas station canopy. They had removed the canopy and 5 of its 6 supporting columns. The employees cut the sixth column and it was falling down to the forks of a skid steer, the victim walked underneath it and was struck in the head.

CATEGORY: OTHER FATALITY CAUSES (Continued)

Inspection Number: 1321626
An employee was walking through an area where hot water was on the ground (approximately 1 inch deep). The employee tripped and landed in the water, which resulted in second and third degree burns to the hands, knees, forearms, and hip. The employee was admitted for treatment and released from the hospital on March 23, 2018. The employee subsequently died on March 25, 2018.

Inspection Number: 1313073
An employee got crushed by a metal cabinet while it was being moved from the welding room to adjacent room at a facility.

Inspection Number: 1306456
Employee was struck by roof panel and fell approximately 30 feet to the ground. He was laying tin on a rooftop when a gust of wind caught the tin, which flew up and knocked him off the building.

Inspection Number: 1318176
An employee was installing a French drain on an undeveloped residential lot. He had stepped into trench with a shovel to level out a layer of gravel above a perforated pipe. As he was stepping out of trench a side wall collapsed. The cave-in material struck him on his lower body pinning him against an opposite wall. The area where the employee was working was approximately 4-feet in depth and 24-inches in width.

Inspection Number: 1313702
An employee was attempting to cap off the sewer line in an excavation approximately 29 feet long, 6 feet wide, and 9-12 feet deep, when the excavation collapsed/caved-in on the employee.

Inspection Number: 1304110
A horizontal drilling crew was pulling drilling rods from a horizontal hole that was drilled for a fiber optic cable installation. As the drilling rods were extracted from the hole by the boring machine, the rods were automatically placed on a retractable rod transfer arm to be manually lifted from the boring machine by hand and placed on a flatbed trailer. Two employees were removing the rods from the transfer arm. One employee was on the end of the rod close to boring machine operator and the other employee was on the end of the rod close to the rear of the machine. The employee on the end of the rod close to the rear of machine was standing between the rod and the rod rack. When the employee on the end of the rod close to the boring machine operator lifted his end of the rod the operator retracted the rod arm. The employee on the other end of the rod hesitated lifting the rod and was crushed between rod and rod rack.

Safe + Sound Week

What Is Safe + Sound Week?
A nationwide event to raise awareness and understanding of the value of safety and health programs that include management leadership, worker participation, and a systematic approach to finding and fixing hazards in workplaces.

Why Participate?
Safe workplaces are sound businesses. Successful safety and health programs can proactively identify and manage workplace hazards before they cause injury or illness, improving sustainability and the bottom line. Participating in Safe + Sound Week can help get your program started or energize an existing one.

(Information Courtesy of OSHA)

We can be contacted at:
Construction Industry Research and Policy Center
The University of Tennessee
Stokely Management Center, Room 217
916 Volunteer Boulevard
Knoxville, Tennessee 37996
Phone: 865-974-8370
E-mail: cirpc@utk.edu

Visit our website!
cirpc.haslam.utk.edu

If you'd like a **free** subscription to this digest, please go to ***http://cirpc.haslam.utk.edu/Digest.asp*** and click "Subscribe."

We would like to thank OSHA's Dave Schmidt for help in obtaining the data used in this newsletter. Comments and suggestions can be directed to John Wagner (jpwagner@utk.edu) as we work together to contribute to a safer construction workplace.